

Work Order ID 57024



Page 1

March 17, 2010 10:40:07 AM

Item ID: D212-664-201

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 17/03/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 05/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

H

Date: 10-3-17 Tooling:

Date:

Run Start



QC:

Date: SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr	Revision Nbr
D212-664-241	Rev D

100



DOCUMENT CONTROL

DC

Document Control

Memo

0.00

Photocopy bluefile and create labels as per PPP D212-664-201

CHG003

S 10/04/14

H for BG 10/04/13

110



Pick Kit

0.00

Packaging

0.00

Packaging

Packaging

Memo

0.00

DP

10 - 3 - 29

120



BENDING MACHINE - CROSSTUBES

0.00

Memo

0.00

CNC Bend 2
CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-241 using CNC bender program 212-af and Folio FT007

(X) MB 10-03-29

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Revision ID:

Item Name: Crosstube Aft

Start Date: 17/03/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 05/04/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop

Sequence ID/
Work Center IDOperation
Description

QC15- Crosstube Dimensional Check

Set Up/
Run Hours

0.00

Draw
Number

S100529

Draw
Rev.

1

Plan
CodeAccept
Qty

(x)

Reject
QtyReject
NumberInsp.
Stamp

130

QC

Quality Control

140



Crosstubes

Crosstubes

Memo

See Dim sheet before Date

0.00

D10/3/21

0.00

Crosstubes

Crosstubes

1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551

2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

4-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241

MB
10-03-29MB
10-03-30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Approvals: Process Plan: _____ Date: _____

Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____

SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
Description

150



HandFXtube

Hand Finishing Crosstubes

Set Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

0.00

0.00

0.00

0.00

S 10/03/13

(X) 8 MB 10-03-30

160



QC

Quality Control

QC3- Inspect Part Finish

0.00

0.00

(Y)

170



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

0.00

S 10/03/13

(X)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Reference:

Approvals: Process Plan: _____ Date: _____

Tooling: _____ Date: _____

Run

Start



QC: _____ Date: _____

SPC (Y/N): _____ Date: _____

Stop

**Sequence ID/
Work Center ID****Operation
Description**Set Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

Outsource process - NDT per QSI038 4.1

0.00



Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038
 Issue P/O: 11593
 LPI as per ASTM 1417 Level 2
 Attach copy of NDT results to work order

190



Receive & Inspect for Damage & Mat'l Certs

0.00

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

200



QC

QC5- Inspect part completeness to step on W/O

0.00

Quality Control

Memo

0.00

Inspect for damage & ensure results are as per Dwg D212-664-241

CL 10/4/04 ①

Prop/k ①

ml 10 04 07 ①

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Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

Spray Painting per QSI005 4.2
SprayPaint

0.00

m 10 04 07 01

SprayPaint

Memo 0.00
1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:
Start Time: 8:30
Finish Time: 9:30

PAINT:
Start Time: 9:00
Finish Time: 10:00

220



QC14- Inspect Spray Paint

0.00

AT 10 - 04 - 08

QC

Quality Control

Memo 0.00
Then, Wrap in plastic bag to protect from scratches

W/O:		WORK ORDER CHANGES					
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Cust Item ID:

Required Date: 05/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

230



Crosstubes

0.00

0.00

MJ 10 04 08 ①

Crosstubes

Memo

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

2-Install supports with magnobond as per QSI 015 Adhere for for 12 Hrs

A/R 6398 Magnobond Batch: 114031
Expiry Date: 01/28/11

3-Install clamps as per Dwg D212-664-241. Torque clamps to 80-100 in lb. → *8 10 04 08*

④

240



QC5- Inspect part completeness to step on W/O

0.00

0.00

QC

Quality Control

1

J 1004-12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Item Name: Crosstube Aft

Stop



Start Date: 17/03/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 05/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run

Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center IDOperation
Description

250



Packaging

Packaging

260



QC

Quality Control

270



Packaging

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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Item ID: D212-664-201

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Start Date: 17/03/2010 Start Qty: 1.00

Required Date: 05/04/2010 Req'd Qty: 1.00

Reference:

Accept



Setup Start



Stop



Cust Item ID:



Customer:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Quality Control

Memo

0.00

10/04/15 HJ

BB10-4-15
D

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

March 17, 2010 10:40:12 AM

Page 1

Work Order ID: 57024



Parent Item: D212-664-201



Parent Item Name: Crosstube Aft

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Date: 17/03/2010

Required Date: 05/04/2010

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

D212-664-201TRN



Manufactured

No

110

Each

3.0000

1.0000



Crosstube Turning Detail

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FG	3	
46386	1	
53559	1	
53560	1	

10-3-29

D3595-063-530



Manufactured

No

230

Each

132.0000



RUBBER CUSHION

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	132	
40780	2	
44998	2	
50030	24	
51776	104	

M 10-04-08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

Picklist Print

March 17, 2010 10:40:12 AM

Page 2

Work Order ID: 57024



Parent Item: D212-664-201



Parent Item Name: Crosstube Aft

Start Date: 17/03/2010

Required Date: 05/04/2010

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

D2940-1



Manufactured No

230

Each

47.0000

2.0000



Support

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	47	
24367	4	
25594	2	
45203	1	
47748	20	
<u>52752</u>	20	

M 10.04.08

March 17, 2010 10:40:12 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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March 17, 2010 10:40:12 AM

Page 3

Work Order ID: 57024



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Parent Item Name: Crosstube Aft

Start Date: 17/03/2010

Required Date: 05/04/2010

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

Required Qty: 1.00

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

MS21920-28



Purchased No

230

Each

154.0000 4.0000



Clamp(per MIL-DTL-8783C)

<u>Warehouse</u> <u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
OFFSHORE		
FG	5	
105884	5	
Main Warehouse		
LG	149	
106864	5	
108466	9	
108847	7	
109181	14	
109965	2	
111281	2	
111734	6	
112624	4	
112863	50	
113776	50	

W 10-04-08

D3428-1



Placard

Manufactured No

250

Each

18.0000 1.0000



<u>Warehouse</u> <u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
Main Warehouse		
ST056 55565	18 18	

R 10/4/17 6

55565 +1

March 17, 2010 10:40:12 AM

Shop Packet Print

Page 3

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Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

MS21042L6



Nut

Purchased No 250 Each 350.0000 6.0000

Warehouse Loc Qty Loc CodeLocation

Main Warehouse

ST300	350
105077	22
110002	5
111578	323

m111578

AN960JD616



Washer

Purchased No 250 Each 279.0000 18.0000

Warehouse Loc Qty Loc CodeLocation

Main Warehouse

ST347	279
112314	3
112828	1
113149	275

m113149

W/O:		WORK ORDER CHANGES					
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Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

Required Qty: 1.00

AN6-40A

Purchased No 250 Each 102.0000 4.0000



Bolt

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

ST343	102	
112612	1	
112679	1	
112828	50	
113422	50	

AN6-41A

Purchased No 250 Each 92.0000 2.0000



Bolt

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

ST344	92	
112489	17	
112805	25	
113288	50	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

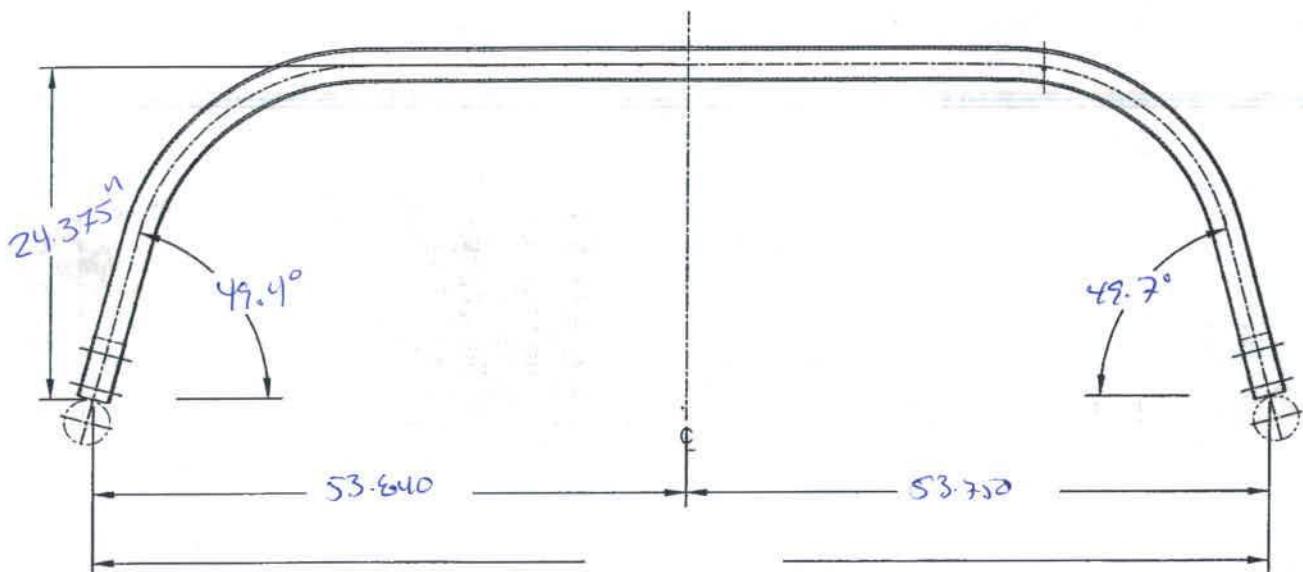
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	57024
Description: Crosstube High Aft (205/212)		Part Number:	D212-664-201
Inspection Dwg: D212-664-241	Rev: <i>P DGA/J</i> <i>10-03-29</i>		Page 1 of 1

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments

QC15 Inspection	<i>S</i>
Date	<i>10/03/29</i>

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	<i>JM</i>
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM <i>JL</i>	<i>JM</i>

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

D

Item	Qty -241	Qty -241B	Part Number	Description
1	X		D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		X	D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6006-129	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	4	4	MS21920-28	CLAMP (OR MS21920-30)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6006-129
FINISHED LENGTH = 124.362±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: D212-664-241 = 44.2 lbs (PER IIN-D212-664)
D212-664-241B = 44.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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WITHOUT NOTICE
WORK ORDER

NO. 57024
pd 10-3-17

RELEASED
2009-10-29
M

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS: ADD -241B (ZN D4-2, B4-2); REMOVED REF & ADD TOLERANCES (ZN DB-3 & C4-3, C8-3 & A8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>H</u>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<u>Q</u>	DRAWING NO.	REV. D
MFG. APPR.	<u>DS</u>	D212-664-241	SHEET 1 OF 4
APPROVED	<u>AD</u>	TITLE	SCALE
DE APPR.	<u>H</u>	CROSSTUBE ASS'Y (205/212 HI AFT)	NTS
DATE	09.09.30	COPRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS PROVIDED BY DART AEROSPACE LTD NO COPIES ARE TO BE MADE BY ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

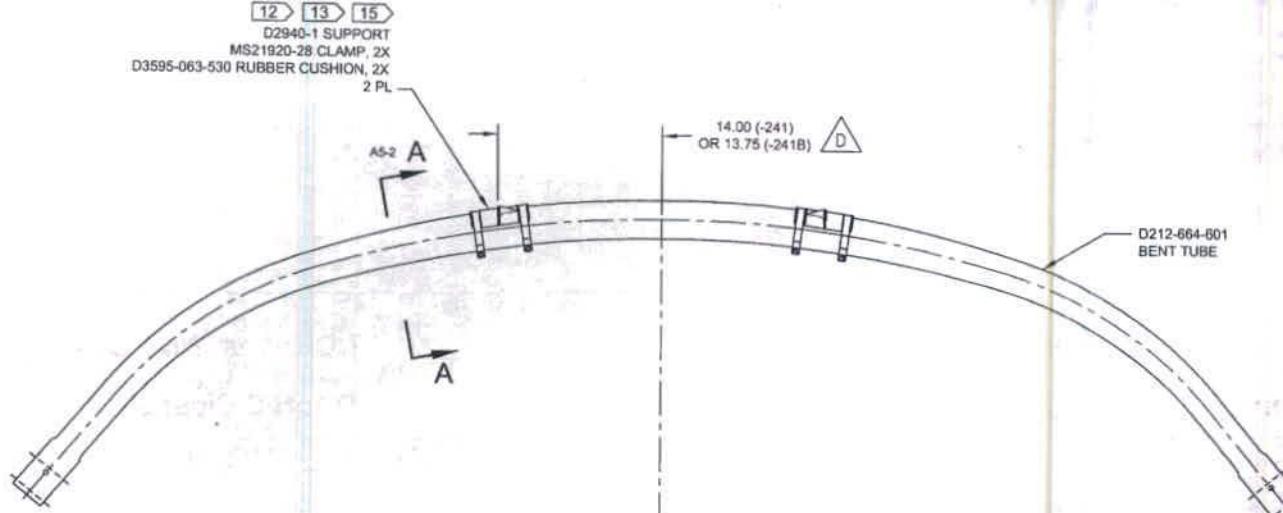
8 7 6 5 4 3 2 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

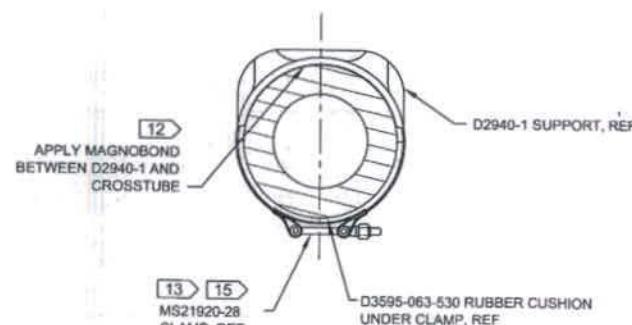
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



**D212-664-241/-241B
ASSEMBLY DETAIL**

wlo 57024



SECTION A-A D6-2
SCALE 4X

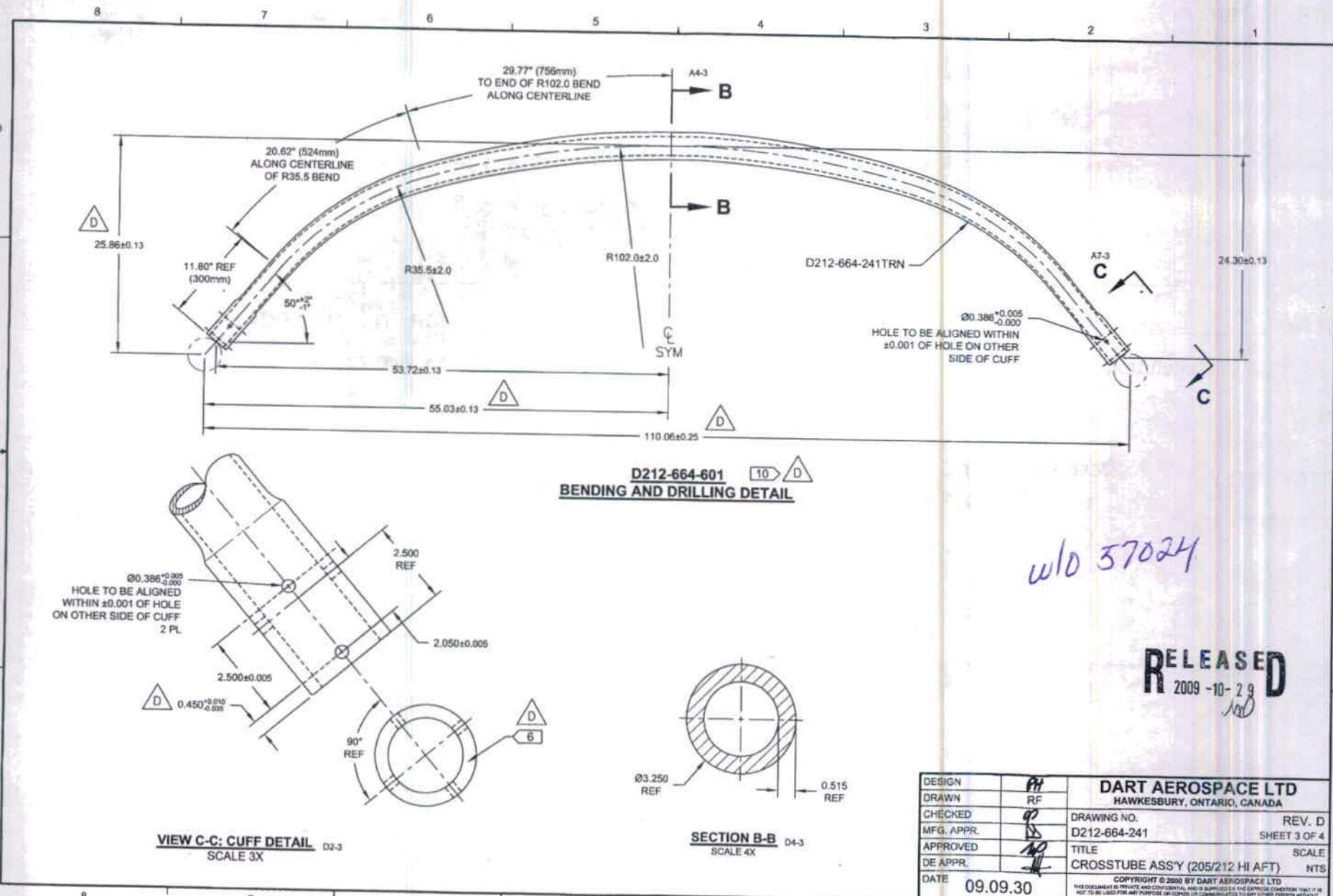
DESIGN	PH	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	Q	DRAWING NO.
MFG. APPR.	DB	D212-664-241
APPROVED	ND	REV. D
DE APPR.	ND	SHEET 2 OF 4
DATE	09.09.30	TITLE
		CROSSTUBE ASS'Y (205/212 HI AFT)
		NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

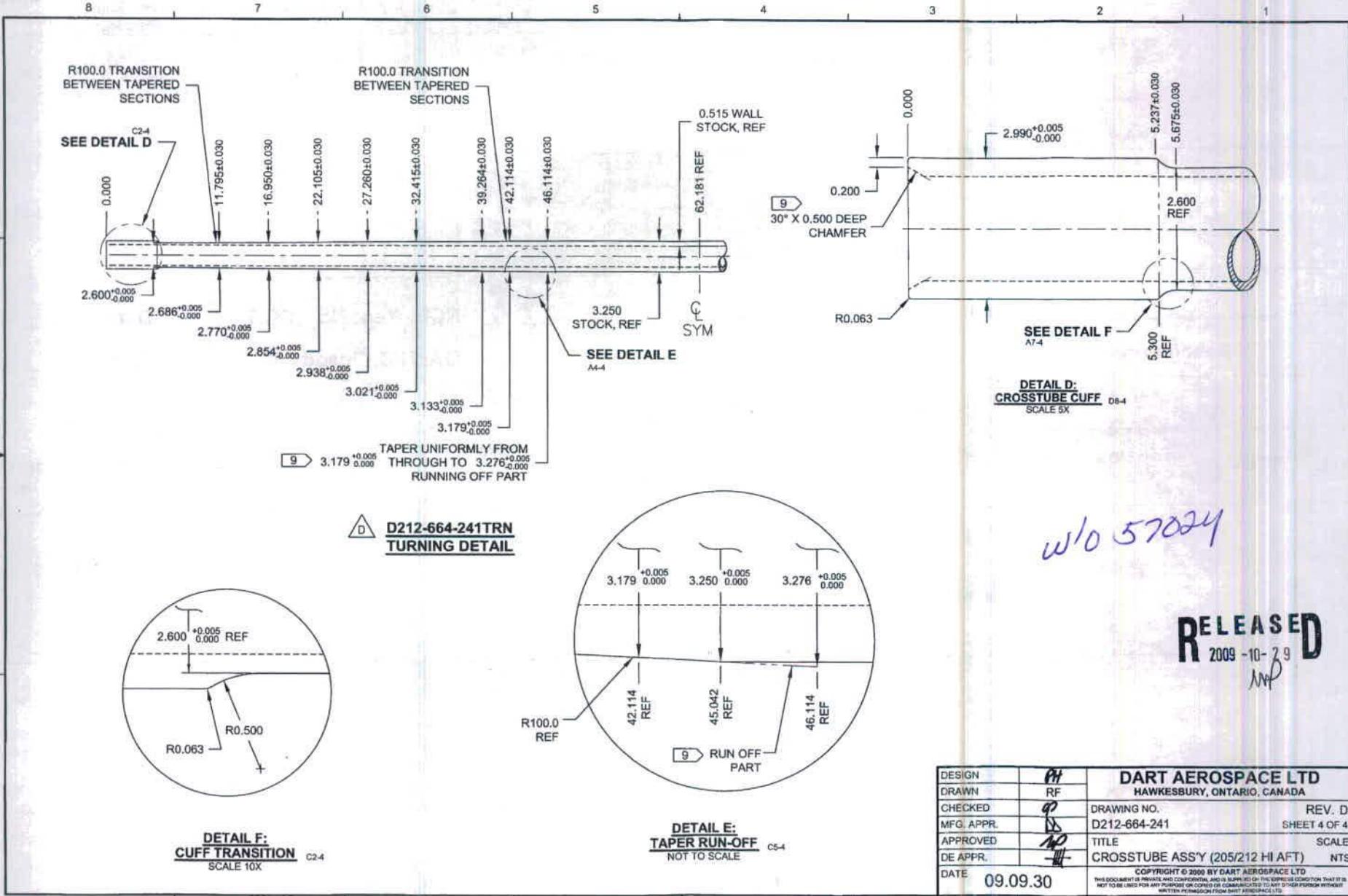


W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN	A4	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN	RF	REV. D
CHECKED	9	DRAWING NO. D212-664-241 SHEET 4 OF 4
MFG. APPR.	DA	
APPROVED	MD	TITLE CROSSTUBE ASS'Y (205/212 HI AFT) NTS
DE APPR.	MM	SCALE
DATE	09.09.30	COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY OTHER PURPOSE THAN THAT FOR WHICH IT WAS PROVIDED OR FOR DISSEMINATION WITHOUT PERMISSION FROM DART AEROSPACE LTD

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	-101	-201	-203	Part Number	Description
	X			D212-664-101	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
		X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
			X	D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
1	1			D212-664-141	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
2		1		D212-664-241	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
3			1	D412-664-243	CROSSTUBE ASSEMBLY, 412 HIGH AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21042-26)
13	4			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21042-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
31			2	* D2856-600-1009	ABRASION STRIP
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21042-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
50	1	1		D3428-1	PLACARD

*REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/241 OR D412-664-243 ASSEMBLIES ABOVE
 NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AA
 SKIDTUBES.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Liquid Penetrant Test Report

P- 15321

CLIENT DART AEROSPACE
ATTENTION LINDA / CHAN TEL
ADDRESS 1270 ABERDEEN ST.
HAWKES BAY ON. K6H 4K7
PROJECT E.P.I. ON
ITEM(S) EXAMINED 4 Pcs

DATE APRIL 6-2010 TIME AM PM
ACUREN JOB NO. 188-10-0343
PO/WO NO. 11593 —
WORK LOCATION MAN - HAWKES BURY
ACCEPTANCE STD. FSTB 1417 REV./DATE 2007

JOB DESCRIPTION PROCEDURE NO. LT-~~Part 2~~. Rev./DATE TECHNIQUE NO. LT-~~Part 2~~. Rev./DATE

PART NO. _____ MATERIAL ALODINE ALUMINUM THICKNESS _____
SCOPE WET FLUORESCENT LIQUID PENETRANT
INSPECTION CARRIED OUT 100% EXTERNAL

TEST DETAILS

METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	MAGNA Flux		BLACK LIGHT S/N 16459		
PENETRANT	2L67	MINIMUM Dwell TIME	4530	MIN.	<input type="checkbox"/> OUTPUT > 1000 μ W/cm ²
PENETRANT REMOVER	H2O	MINIMUM DRY TIME	>10	MIN.	<input type="checkbox"/> AMBIENT < 2 fc
DEVELOPER	SKID 52	MINIMUM Dwell TIME	10	MIN.	<input type="checkbox"/> LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY	OTHER LABNO	CAL DUE DATE 164-7-2010
LIGHT METER S/N 1098866					

TEST SURFACE

TEST SURFACE AS GROUND AS WELDED MACHINED SHOT BLASTED CLEAN BARE METAL
SURFACE CONDITION < -4°C / 20°F -4°C / 20°F TO 10°C / 50°F 10°C / 50°F TO 52°C / 125°F > 52°C / 125°F

RESULTS-

1	CROSS TUBE - W.O. 56769	✓
1	CROSS TUBE - W.O. 56768	✓
1	CROSS TUBE - W.O. 57025	✓
1	CROSS TUBE - W.O. 57024	✓

2011 10.04.07

Scope of Services

Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised by others performing such services in the same or similar locality. No implied warranty, guarantee or representation, express or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	<u>Matthew Mowat</u> PRINT	<u>Matthew Mowat</u> SIGNATURE	DTR #	E-27374	
TECHNICIAN (SIGNATURE)	<u>MKE Johnson</u>		REPORT		
NAME (PRINT)			REVIEWED BY:	NAME	INITIALS
	1 ST TECHNICIAN		2 ND TECHNICIAN		
CGSB LEVEL	<u>II</u>	SNT LEVEL	CGSB LEVEL	SNT LEVEL	
CGSB REG. NO	<u>6066</u>		CGSB REG. NO		

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PINK - TECHNICIAN COPY

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1990-1991

1991

1992

1992

1992

1992

1992



LIQUID PENETRANT TEST REPORT

P- 15321

CLIENT Dart Aerospace DATE Apr 6-2010 PAGE 1 OF 1
ATTENTION LINDA JOHAN TEL TIME AM PM
ADDRESS 1270 ABERDEEN ST.
HAWKES BAY ON. K0H 1K7
PROJECT F.P.I. ON CLASS TUBES
ITEM(S) EXAMINED 4 Pcs

ACUREN JOB NO. 108-10-0743PO/WO NO. -WORK LOCATION MAN - HAWKES BURYACCEPTANCE STD. ASTM 1417 REV./DATE 2007

JOB DESCRIPTION PROCEDURE NO. LT-0002 REV./DATE TECHNIQUE NO. LT-Test.2 REV./DATE
PART NO. MATERIAL ALODINE Aluminum THICKNESS
SCOPE WET FLUORESCENT LIQUID PENETRANT
INSPECTION CARRIED OUT 100% EXTERNAL

TEST DETAILS

METHOD <input checked="" type="checkbox"/> FLUORESCENT <input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH <input type="checkbox"/> SOLVENT REMOVABLE <input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND <u>MAGNA Flux</u>	BLACK LIGHT S/N <u>16459</u> <input type="checkbox"/> OUTPUT > 1000 μ W/cm ² <input type="checkbox"/> AMBIENT < 2 fc
PENETRANT <u>2L67</u> MINIMUM DWELL TIME <u>45</u> MIN.	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER <u>H2O</u> MINIMUM DRY TIME <u>>10</u> MIN.	OTHER <u>LABWCO</u>
DEVELOPER <u>SKD 52</u> MINIMUM DWELL TIME <u>10</u> MIN.	LIGHT METER S/N <u>1098866</u> CAL DUE DATE <u>May 7-2010</u>
DEVELOPER TYPE <input checked="" type="checkbox"/> NON AQUEOUS <input type="checkbox"/> AQUEOUS <input type="checkbox"/> DRY	

TEST SURFACE

SURFACE CONDITION AS GROUND AS WELDED MACHINED SHOT BLASTED CLEAN BARE METAL
SURFACE TEMPERATURE < -4°C/20°F -4°C/20°F TO 10°C/50°F 10°C/50°F TO 52°C/125°F > 52°C/125°F

RESULTS- (METRIC IMPERIAL)

1 CrossTube - W.O. 56769 ✓
1 CrossTube - W.O. 56768 ✓
1 CrossTube - W.O. 57025 ✓
1 CrossTube - W.O. 57024 ✓

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE <u>Matthew Whistler</u> PRINT <u>Matthew Whistler</u> SIGNATURE <u>Matthew Whistler</u> DTR # <u>E-27374</u>	
TECHNICIAN (SIGNATURE) <u>M.L.E. Johnson</u>	REPORT REVIEWED BY:
NAME (PRINT) <u>M.L.E. Johnson</u>	NAME <u></u> INITIALS <u></u>
1 ST TECHNICIAN CGSB LEVEL <u>I</u> SNT LEVEL <u>CGSB</u> CGSB REG. NO. <u>6066</u>	2 ND TECHNICIAN CGSB LEVEL <u></u> SNT LEVEL <u></u>

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